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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/514,879	02/29/2000	Chi Wang	132.424	1861
7590	12/31/2003			EXAMINER
SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC 2100 PENNSYLVANIA AVENUE, NW WASHINGTON, DC 20037-3213			GLENN, KIMBERLY E	
			ART UNIT	PAPER NUMBER
			2817	

DATE MAILED: 12/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/514,879	WANG ET AL.
	Examiner	Art Unit
	Kimberly E Glenn	2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) 22-53 is/are allowed.
- 6) Claim(s) 1,2,5-15 and 17-21 is/are rejected.
- 7) Claim(s) 3, 4 and 16 is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. ____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) Interview Summary (PTO-413) Paper No(s). ____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 5-15, 19, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Wulff US Patent 6,392,506.

Wulff discloses in figures 3 and 4, a multi-cavity two-section transmit and receive filter assembly. The transmit section includes resonant cavities 26a-26g, connected as shown by arrows 27, and the receive section includes resonant cavities 28a-28g, connected as shown by arrows 29. Each of the cavities includes a center conductor or post 31 with a conductive cavity or housing 32 surrounding the post. The center conductors or posts 31 are in combline configuration. post extends upwardly and is spaced from the top wall of the cavity. The cavity or housing can be formed by machining or by casting aluminum or other metal. The cavities are tunable by adjusting the height of the post 31. The post includes an adjustable screw (not shown), which engages the post cap 33 to adjust the space between the cap and the top wall of the cavity to thereby tune the cavity. Wulff also states that other types of tunable cavities can be employed to form the transmit and receive sections of a filter assembly for an RF communication system.

The filter sections 26 and 28 are connected to the antenna by a coaxial coupler 36 mounted on the wall of the single input/output cavity 37. The cavities 26a-26g and 28a-28g are coupled to

one another via openings 38 and 39 formed in the walls between cavities. The cavity resonators 26a-26g of the transmit section are tuned to pass the transmit RF frequency band from the input coupler while blocking all other frequencies. The cavity resonators 28a-28g of the receive section are tuned to pass the received frequencies while blocking all other frequencies. Transmit and receive RF signals are coupled to the transmit and receive sections of the multi-cavity filter by the resonant input/output cavity 37. The signals are coupled into the cavity by an electric field loop coupler 41. The configuration and location of the coupling loop 41 is adjustable to thereby tune and determine the impedance of the cavity 37. The method steps to the disclosed apparatus are inherent. (Figures 1,3 and 4 and column 2, line 49 through column 3 line 26)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wulff US Patent 6,392,506 in view of Hagstrom et al US Patent 6,215,376.

The primary reference, Wulff discloses in figures 3 and 4, a multi-cavity two-section transmit and receive filter assembly. The transmit section includes resonant cavities 26a-26g, connected as shown by arrows 27, and the receive section includes resonant cavities 28a-28g, connected as shown by arrows 29. Each of the cavities includes a center conductor or post 31 with a conductive cavity or housing 32 surrounding the post. Wulff also states that other types of

tunable cavities can be employed to form the transmit and receive sections of a filter assembly for an RF communication system.

Thus, Wulff is shown to teach all the limitation with exception of the coupling apertures being positioned at the peaks of the magnetic field.

Hagstrom et al teaches in figure 5, a upper window 505 that coincides with the first resonator's 501 electric field maximum and the second resonator's 502 magnetic field maximum so that the upper window provides electromagnetic coupling between the first resonator's electric field and the second resonator's magnetic field. Correspondingly, the lower window 506 provides electromagnetic coupling between the first resonator's magnetic field and the second resonator's electric field. (Column 5, lines 30-63)

One skilled in the art would have found it obvious to provide the coupling apertures at the peaks of the magnetic field. The motivation of this modification would have been to optimize the electromagnetic coupling between the resonators.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wulff US Patent 6,392,506.

The primary reference, Wulff discloses in figures 3 and 4, a multi-cavity two-section transmit and receive filter assembly. The transmit section includes resonant cavities 26a-26g, connected as shown by arrows 27, and the receive section includes resonant cavities 28a-28g, connected as shown by arrows 29. Each of the cavities includes a center conductor or post 31 with a conductive cavity or housing 32 surrounding the post. Wulff also states that other types of tunable cavities can be employed to form the transmit and receive sections of a filter assembly for an RF communication system.

Thus, Wulff is shown to teach all the limitation with exception of the adjustment screw being positioned where the electric field is a maximum in the common resonator.

One skilled in the art would have found it obvious to place the adjustment screw in a position where the electric field is maximum value. The motivation of this modification would have been to optimize the tuning of the cavity.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wulff US Patent 6,392,506.

The primary reference, Wulff discloses in figures 3 and 4, a multi-cavity two-section transmit and receive filter assembly. The transmit section includes resonant cavities 26a-26g, connected as shown by arrows 27, and the receive section includes resonant cavities 28a-28g, connected as shown by arrows 29. Each of the cavities includes a center conductor or post 31 with a conductive cavity or housing 32 surrounding the post. Wulff also states that other types of tunable cavities can be employed to form the transmit and receive sections of a filter assembly for an RF communication system.

Thus, Wulff is shown to teach all the limitation with exception the inner conductor being made of the same conductive material that is used for the common resonator's enclosure.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the inner conductor being made of the same conductive material as the common resonator's enclosure, since it has been held to be within the general skill of a worker in the art to select a known material on basis of its suitability. The motivation for this modification was would be the ease of manufacturing.

Allowable Subject Matter

Claims 22-53 are allowed.

Claims 3,4 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: With regards to claims 3 and 4, the prior art of record does not disclose or fairly teach the one of the resonators being a dielectric loaded resonator or a ceramic resonator. With regard to claims 16 and 22-53, the prior art of record does not disclose coaxial resonators being multiple half wavelength coaxial resonators.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Piirainen US Patent 5,418,509, Wang et al US Patent 6,600,394, Saito US Patent 4,567,454, Zaki et al US Patent 5,804,534 and Burdenski US Patent 5,991,607.

If a copy of a provisional application listed on the bottom portion of the accompanying Notice of References Cited (PTO-892) form is not included with this Office action and the PTO-892 has been annotated to indicate that the copy was not readily available, it is because the copy could not be readily obtained when the Office action was mailed. Should applicant desire a copy of such a provisional application, applicant should promptly request the copy from the Office of Public Records (OPR) in accordance with 37 CFR 1.14(a)(1)(iv), paying the required fee under 37 CFR 1.19(b)(1). If a copy is ordered from OPR, the shortened statutory period for reply to

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this Office action will not be reset under MPEP § 710.06 unless applicant can demonstrate a substantial delay by the Office in fulfilling the order for the copy of the provisional application. Where the applicant has been notified on the PTO-892 that a copy of the provisional application is not readily available, the provision of MPEP § 707.05(a) that a copy of the cited reference will be automatically furnished without charge does not apply.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly E Glenn whose telephone number is (703) 306-5942. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (703) 308-4909 ((571)-272-1761 after January 13, 2004). The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Kimberly E Glenn
Examiner
Art Unit 2817

keg

Robert Pascal
Supervisory Patent Examiner
Technology Center 2800